WHAT'S THAT TREE?

by Herbert Appleton

A KEY TO 150 TREE SPECIES

FORESTRY ENTERPRISES
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THE REASON FOR THIS KEY

This key grew out of frustration. The usual tree guides just don't enable me quickly to identify a tree. They are written for the student who knows "dioecious" from "monoecious", "catkins" from "panicles", etc.

If you are unfamiliar with technical terms or unwilling to carry a magnifying glass, you will want a key with which you can spot a slippery elm, for example, without knowing all its family connections. Such a key must be simple to use. And it must go directly to the answer.

Instead of loading you down with all there is about a slippery elm that relates it to an American elm, this key helps you distinguish the slippery elm from any other important tree. It gives just enough of the individual characteristics of each tree to set that tree apart.

To be of value in the key, characteristics had to be fairly constant, readily observable for long periods, and capable of objective description. The number of needles in a bundle, the taste of a twig, the shape of a leaf scar are such characteristics. The shape of the crown, the fruit, the flowers, and the foliage color are not.

In preparing this edition of "WHAT'S THAT TREE?" I wish to express my thanks to Mr. Albert G. Hall, and Mr. Harris Collingwood for their invaluable help in constructing the KEY. My thanks go also to Mr. William A. Dayton, for his comments and criticism, to Boy Scout Troop 203, Bethesda, Md., for the first field test of the manuscript, and to Mr. Herbert Gutman and the many other individuals who tested the first edition of the KEY, published by the American Forestry Association.

The descriptions have been checked against "KNOWING YOUR TREES" by Collingwood and Brush, "TEXTBOOK OF DENDROLOGY" by Harlow and Harrar, and other texts.

Line drawings are by Ada Appleton.

Herbert Appleton

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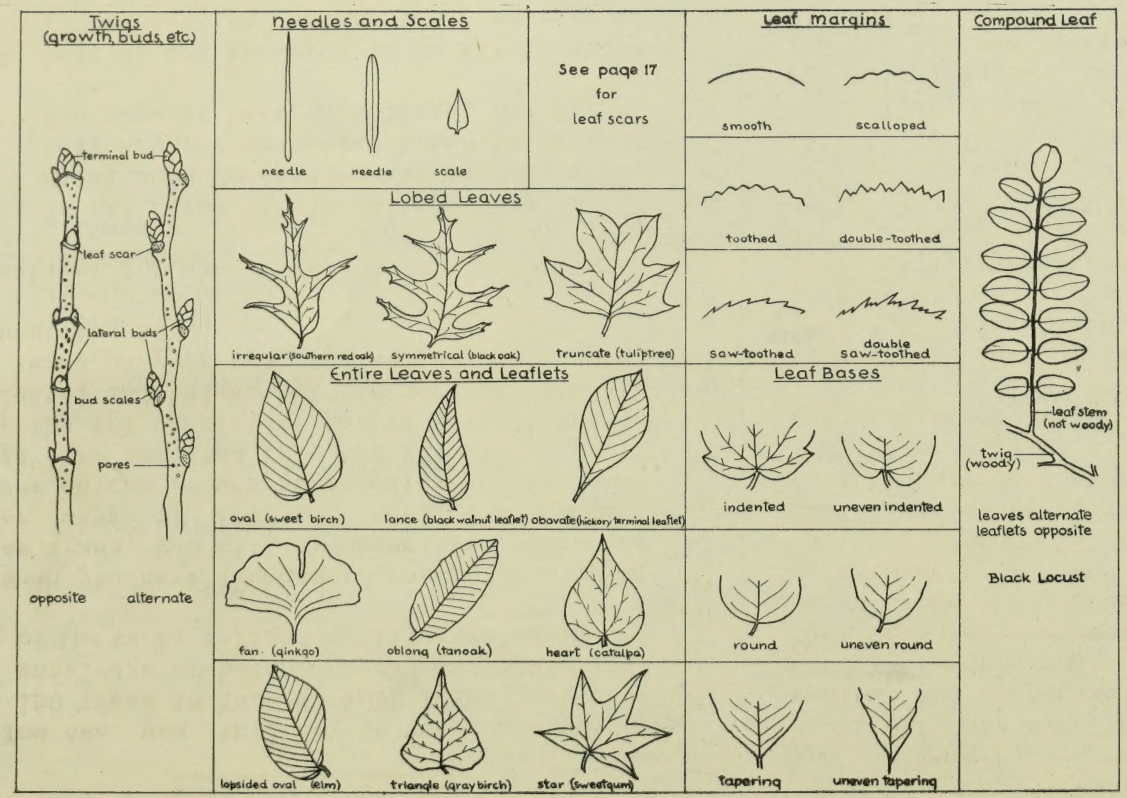


WORDS YOU'LL NEED

COMPOUND: Having more than one blade growing on a single stem. These blades are called leaflets. Note that the leaf stem is not woody. Use leaves back from end of branch.

SIMPLE: Having a single blade on a leaf stem. Use leaves back from end of branch.

ENTIRE: With a margin which is not lobed. In this key "entire" includes smooth, wavy, (having a margin which does not lie flat) scalloped, toothed, double toothed, saw-toothed, and double sawtoothed *(see sketches)*

SCARS: The marks left on a twig by the stems of last year's leaves. Used only in Key B.

BLOOM: A powdery or waxy substance on the surface.

STOMATA: Tiny breathing pores on the surfaces of leaves. They usually occur in rows.

SYMMETRICAL: Generally balanced on both sides of the center line of a leaf, from tip to base.

WHAT TO LOOK FOR

You can use this KEY to recognize any of the 150 trees in KNOWING YOUR TREES, without any knowledge of botany beyond an understanding of the terms defined or illustrated above.

When you have learned to recognize some of these trees, you will discover that there are other ways of spotting them, for example: acorns on the ground surrounding an oak. Such "tags" are ommitted from the KEY in order to keep the KEY consistent and to base it mainly on leaves and twigs. But the more of the tags you learn on your own the sooner you can do without the KEY.

Directions for use of KEY:

1. If the tree is in foliage, use KEY A. First come the needles and scales; after that are the so-called broad leaves. If the tree is bare of foliage, use KEY B.

2. Needles are arranged in the KEY by shape (cross-section) and by the number growing in a group. Roll the needle between your fingers to determine its shape. Then check its length. Then match the needle against the characteristics given in the KEY. If there are two species with identical needles, inspect the bark. In some cases shape and grouping of needles will be enough.

3. Scale leaves are generally single. Therefore be sure to observe the other characteristics and to match them against the specifications in the KEY.

4. For broad leaf trees, the leaf growth (opposite or alternate), type (compound or simple), and shape are all important (see definitions and sketches). In addition, shape of base is used. Each of these features represents a KEY grouping. An arrow in a column means that the characteristic is not important, and that the significant factor is to be found to the right. Note that the first thing to look for is how the leaves grow -- opposite or alternate.

5. If the tree is bare (a deciduous tree during winter months) use KEY B. Here the important things are placement and shape of leaf scars, twig and bud characteristics. Bark comes into the picture only when necessary. If the placement and shape of a scar are enough, that is as far as you go (see northern catalpa). To taste bark you needn't dig at the trunk. The bark of twigs will do. Bark color or texture is based on that of large mature trees.

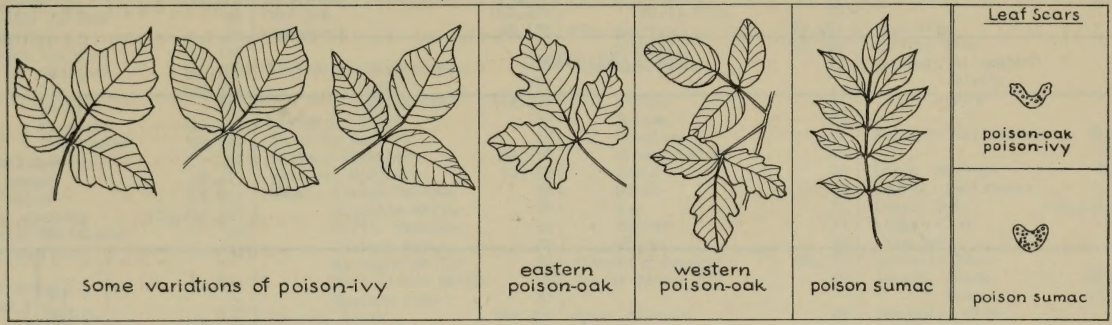
6. If you are in doubt about the species of the tree, study the description given in KNOWING YOUR TREES. Check the range map in that book to be sure that the tree you are trying to identify not only has the same observed characteristics as the tree in KNOWING YOUR TREES but is growing in the area to which it is native. If you do not have a copy of KNOWING YOUR TREES, any other standard book on trees will be useful. Wherever practical the KEY shows the natural range of a species. If your tree grows naturally in the East, there is no need to study the KEY for giant sequoia since this in its natural state is limited to California.

There is wide variation within a species. Two black oak trees will not look exactly alike. A leaf from one will not be exactly the same as a leaf from another. In fact, two leaves from the same tree may differ. Color may vary within a species. On the other hand, a smell of camphor will always be present in a California laurel leaf, and will not be in any other lance-shaped leaf with pointed base. Identifying a tree once will not assure you that you will spot another tree of the same species next time you go out without the KEY. Familiarity may come only after practice and after you have accepted the degree of variation you will encounter.

Don't be afraid to snap a twig or crush a leaf, and to sniff or chew it. You needn't swallow it. Just be sure you recognize poison ivy, poison oak, and poison sumac when you see them.

POISONOUS WEEDS - LOOK OUT FOR THESE

The recognition key for the poisonous plants is given below. To be safe, you should memorize this key.



SUMMER

GROWTH	TYPE	SHAPE OF LEAFLET	SHAPE OF BASE	CHARACTERISTICS	
ALTERNATE	COMPOUND	See drawings above	TAPERING	3 leaflets shiny - center leaflet symmetrical, outer leaflets match each other, inconspicious flowers cluster above bases of leaves; yellowish white waxy or downy berries with distinct lines like orange sections; grows as shrub or vine. When growing as a vine on a tree it develops fuzzy rope of aerial roots.	Poison Ivy
				3-7 leaflets downy below , center leaflet symmetrical ; yellowish-white waxy berries with distinct lines ; grows from New Jersey south and west to Texas as a shrub.	Poison Oak
				3 leaflets , glossy, leathery , sawtoothed or round-toothed , vary on same plant, lobes appear on both edges ; greenish white flowers ; greenish or creamy white waxy berries with distinct lines; grows on West Coast as shrub or vine.	Western Poison Oak

GROWTH	TYPE	SHAPE OF LEAFLET	SHAPE OF BASE	CHARACTERISTICS	
ALTERNATE	COMPOUND	See drawings above	Round	3 leaflets, inconspicuous flowers, berries as above.	Poison Ivy
			Round	3 leaflets, glossy leathery, berries as above.	Western Poison Oak
			Round or Tapering	7-13 leaflets, velvety; smooth margins, scarlet midribs, green or ivory waxy berries cluster in from end of stem. Grows mostly in eastern swamps as a shrub or small tree.	Poison Sumac
			Round or indented	3-7 leaflets, orange berries cluster in from end of stem. Grows in southern Florida and the Keys as a shrub or small tree.	Poison Wood

WINTER

GROWTH	SHAPE OF LEAF SCAR	CHARACTERISTICS	
Alternate	V- or U-shaped	Light brown twigs - prominent orange pores. Look for berries as described for summer.	Poison Ivy, Poison Oak, Poison Sumac

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A. FOLIAGE KEY (Year Round for Evergreens; Spring, Summer and Fall for Deciduous)

	LEAF TYPE		GROUPING	LENGTH (INCHES)	CHARACTERISTICS	BARK	
1	NEEDLES	3 edges	3 or 4	6-8	Stomata on all sides		Pond Pine
2			12 - 20	¾ - 1¼	Soft, single at first		Tamarack
3			30 - 40	1 - 1-5/8	——————————>		Western Larch
4		4 edges	1	¼ - ¾	White stomata, whitish bloom		Black Spruce
5			1	1/3 - 2/3	Skunk odor when crushed		White Spruce
6			1	1/2	Midrib on under side		Red Spruce
7			1	1/2 - 3/4	Thin white lines on each side		Norway Spruce
8			1	1/2 - 3/4	Soft, stand out horizontally, bristly pointed		Pacific Yew
9			1	1/2 - 1¼	Silvery stomata bands below		Sitka Spruce
10			1	1/2 - 1¼	Powdery surface, sharp pointed		Blue Spruce
11			1	5/8 - 1¼	New growth lighter colored	Zig-zag furrows	Red Fir
12			1	5/8 - 1½	Grooved above, stomata bands on all sides		Noble Fir
13			1	1/2	Unpleasant odor when crushed		Engelmann Spruce

	LEAF TYPE	GROUPING	LENGTH (INCHES)	CHARACTERISTICS	BARK	
14	NEEDLES - FLAT, STOUT, OR 2 - EDGED	1	1/12 - 1	Blunt point, spiral all sides of branch		Mountain Hemlock
15		1	1/3 - 2/3	2-ranked spirals, grow on small stems		Eastern Hemlock
16		1	1/3 - 3/4	Shiny, grooved above, 2 white stomata bands below		Western Hemlock
17		1	1/3 - 3/4	Shiny above, central groove and 2 white stomata bands below	Ridged	Carolina Hemlock
18		1	1/3 - 1	(Native to Northern California and So. Oregon)	Reddish 3-12 inches thick	Redwood
19		1	1/2 - 3/4	2-ranked, feathery, shorter, scale-like on some branches	Fluted at base	Baldcypress
20		1	1/2 - 1	Grow on upper side of branch, grooved above, silvery with 8-12 stomata bands below.		Fraser Balsam Fir
21		1	1/2 - 1½	Soft, white band each side of midrib below		Douglasfir
22		1	¾ - 1-1/8	4 or 5 rows of stomata above		Weeping Spruce
23		1	¾ - 1½	Grow in 4 ranks		Silver Fir
24		1	¾ - 1¾	Curl towards upper side of branch		Alpine Fir
25		1	1	Dark blue-green above, pale below, 2-ranked spiral, 2 stomata bands below		Balsam Fir
26		1	1 - 2	Dark yellow-green above, silvery below 2-ranked spiral		Grand Fir
27		1	1½	Incurved, whitish tinge		Singleleaf Pinyon Pine

	LEAF TYPE		GROUPING	LENGTH (INCHES)	CHARACTERISTICS	BARK	
28	NEEDLES	FLAT, STOUT OR 2 - EDGED	2	3/4 - 1½	Cluster toward end of branch		Jack Pine
29			2	1 - 3	Rarely single	Pale brown, scaly	Lodgepole Pine
30			2	1 - 3	Whitish cast; stand out 2 sides of branch	Balsam blisters, ashy gray	White Fir
31			2	1½ - 3	Twisted, sharp pointed, blue-green	Shallow fissures	Scotch Pine
32			2	1½ - 3	Soft, sharp pointed	Light reddish brown scales	Spruce Pine
33			2	1½ - 3	Waxy purplish bloom		Virginia Pine
34			2	3 - 6½	Grow in sheath		Austrian Pine
35			2	4 - 6	Flexible, breaks clean when doubled between fingers		Red Pine
36			2-3	7/8 - 1¾	Sharp pointed, curved		Pinyon Pine
37			2-3	2½ - 5	Rigid	Plates, scales, reddish brown	Table Mountain Pine
38			2-3	3 - 5	Flexible, not twisted	Scaly, roughly rectangular plates	Shortleaf Pine
39			2-3	5 - 10	Turpentine odor when twig is crushed		Ponderosa Pine
40			2-3	5 - 10	Violet or pineapple odor when twig is crushed		Jeffrey Pine
41			2-3	8 - 12	Large bunches at ends of branches		Slash Pine

	LEAF TYPE	GROUPING	LENGTH (INCHES)	CHARACTERISTICS	BARK	
42	NEEDLES, FLAT, STOUT OR 2 - EDGED	3	7/8 -1¾	Sharp pointed, curved		Mexican Pinyon Pine
43		3	2½ - 5	→	Deeply furrowed, brownish-yellow	Pitch Pine
44		3	5 - 9	Fibrous sheath		Loblolly Pine
45		3	6½ - 12	Large bunches at ends of branches	Deeply scaled	Coulter Pine
46		3	8 - 18	Large bunches at ends of branches	Papery scales	Longleaf Pine
47		3	8½ - 12	Thin clusters		Digger Pine
48		4	7/8 - 1¾	Sharp pointed, curved		Parry Pinyon Pine
49		5	1¼ -1-1/3	→		Bristlecone Pine
50		5	1½ - 2½	→	Scaled, light gray over reddish brown	Whitebark Pine
51		5	1½ - 3	→	Furrowed; triangular blocks, very dark brown	Limber Pine
52		5	2 - 4	Frosty		Western White Pine
53		5	2½ - 4	Twisted; 2-6 stomata on each surface	Ridged, deeply furrowed	Sugar Pine
54		5	3 - 5	Brown sheath at base		Eastern White Pine
55		5	7½ - 13	→		Torrey Pine

	LEAF TYPE	GROUPING	LENGTH (INCHES)	CHARACTERISTICS	BARK	
56	SCALES	1	——>	(Grows naturally only in California)	Reddish brown with whitish surface	Monterey Cypress
57		1	——>	Glossy above, white triangular spots below		Western Redcedar
58		1	1/16	Silvery, unpleasant odor when crushed		Arizona Cypress
59		1	1/16	White stomata lines		Port Orford Whitecedar
60		1	1/16-1/8	Keeled below, turn brown second year	Gray	Atlantic Whitecedar
61		1	1/8	Overlap in 4-6 rows (native only from Colorado west)	Fibrous scales	Utah Juniper
62		1	1/8	Opposite pairs, 3's when young, 6 longitudinal rows (native to Southwest)	Square plates	Alligator Juniper
63		1	1/8	Turn brown second year (native to Washington and Oregon)	Shallow seams	Alaska Yellow-cedar
64		1	1/8 - 1/2	Aromatic when crushed		Calif. Incensecedar
65		1	1/4	Light green below, profuse		Northern Whitecedar
66		1	1/4 - 1/2	(Native to California)	Spongy 12-24 inches	Giant Sequoia

	LEAF TYPE	GROUPING	LENGTH (INCHES)	CHARACTERISTICS	BARK	
67	NEEDLES AND SCALES	→	1/8	Scales on older growth; overlap in groups of 3, grow in 6 rows; red bark exposed when scales drop. Needles on new growth.	Fibrous	Sierra Juniper
68		→	1/16	Scales on older growth in opposite pairs. Needles on new growth. All turn brown beginning second year.	Fibrous, sheddy	Eastern Redcedar

	GROWTH	TYPE	SHAPE OF LEAFLET	SHAPE OF BASE	LEAFLET, STEM, AND TWIG CHARACTERISTICS	BARK	
69	OPPOSITE	COMPOUND	Pointed	Tapering	3-7 leaflets, pointed		Oregon Ash
70			Oval or lance	Tapering	5-7 leaflets, grow from common point at end of stem, parallel veins, midrib to margin, unpleasant odor.		Ohio Buckeye
71			Lance	Tapering or unevenly round	5-9 leaflets		White Ash
72			Obovate	Tapering	5-7 leaflets, wrinkled above, toothed, grow from common point at end of stem; stem swells abruptly at base.		Horsechestnut
73			Varied	Varied	3-9 leaflets, pointed at tip, sometimes 3-lobed.		Boxelder

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM OR TWIG CHARACTERISTICS	BARK	
74	OPPOSITE	SIMPLE	LOBED	SYMMETRICAL	INDENTED	3-5 lobes, double toothed, 2-4 inch stem, sides of terminal lobe converge.		Red Maple
75						5 lobes, upper surface wrinkled, several teeth on each side of each lobe.		Sycamore Maple
76						5 lobes, deep sinuses, wavy margins (grows only on Pacific coast)		Bigleaf Maple
77						5 lobes, wavy, sometimes toothed and wavy		Sugar Maple
78						5-7 lobes, upper surface smooth between deep veins, 1 or 2 teeth on each side of each lobe, stem gives off milky juice		Norway Maple
79					Indented or straight	5 lobes, deep sinuses, sharp teeth, silvery below, sides of terminal lobe flare out, twig gives off unpleasant odor when broken		Silver Maple
80			ENTIRE	OVAL	tapering	Veins turn parallel to margin		Flowering Dogwood
81						Short grooved hairy stem with large clasping base.		Pacific Dogwood
82					heart	Hairy above, no teeth, but sometimes one pointed lobe on each side.		Royal Paulownia
83						Smooth above		Northern Catalpa
84						Finely toothed, (grows only in West).		Cascara Buckthorn

	GROWTH	TYPE	SHAPE OF LEAFLET	SHAPE OF BASE	LEAFLET, STEM OR TWIG CHARACTERISTICS	BARK	
85	ALTERNATE	COMPOUND	OVAL	→	5-11 leaflets, terminal leaflet shorter and broader, leaflets alternate on stem		American Yellowwood
86				Tapering	9-15 leaflets, leaflets pointed, opposite		Pecan
87				Round	7-19 leaflets, leaflets opposite		Black Locust
88					40-60 leaflets, pointed, basal leaflets lobed.		Kentucky Coffeetree
89				Unequally round	11-17 leaflets, pointed, aromatic, fine sticky hairs, sticky stem.		Butternut
90			OBOVATE	→	5-7 leaflets	Curved pieces peel away vertically from trunk.	Shagbark Hickory
91				→	5-9 leaflets	Straight pieces peel away vertically from trunk.	Shellbark Hickory
92			LANCE	Tapering	5-9 leaflets, blunt yellow bud at base		Bitternut Hickory
93					5-9 leaflets, terminal leaflet about 3 times size of base leaflets, fragrant.		Mockernut Hickory
94				Rounded	18-28 leaflets, terminal leaflet lacking in some		Honeylocust
95				→	5-9 leaflets, blunt reddish brown bud at base		Pignut Hickory
96				→	15-23 leaflets, sharp teeth, hairy stem		Black Walnut

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, OR TWIG CHARACTERISTICS	BARK	
97	ALTERNATE	SIMPLE	LOBED	SYMMETRICAL	Indented	5-7 lobes, star shaped, aromatic		Sweetgum
98						Generally 4-lobed; truncate (*see sketch*)		Tuliptree (Yellow Poplar)
99						3-5 lobes, small tip in indentation of base		Sycamore
100					→	5 lobes, middle lobes give cross-like form		Post Oak
101					→	5-9 lobes, rounded sinuses extend over half-way to midrib, bristle-tipped, midrib and main veins yellow, 1½-2½ inch stems		Scarlet Oak
102					→	7-9 lobes, deep rounded sinuses, sinuses and lobes of varying widths, bristle-tipped; tough, thick, yellow 2-6 inch stems.		Black Oak
103					→	5-9 lobes, round lobes, margins turn under, grows on West Coast.		Oregon White Oak
104					→	a) on lower branches: 3-lobed, bell-shaped, shallow sinuses, b) on upper and lower branches: 5-7 lobed, finger-like, curved, toothed, sometimes pointed.		Southern Red Oak
105					→	5-11 lobes, bristle tipped, leaf tapers from broad base.		Northern Red Oak

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, OR TWIG CHARACTERISTICS	BARK	
106	ALTERNATE	SIMPLE	LOBED	Irregular	→	5-9 lobes, deep, wide sinus each side of center, wide towards tip, toothed terminal lobe, leaves crowd toward end of twig.		Bur Oak
107					→	5-9 lobes, irregular points, very narrow lobes	Grayish brown	Pin Oak
108					→	5-9 lobes, broad irregular sinuses, lower lobes rounded or acute, terminal lobe broad with small nearly triangular lateral lobes.		Overcup Oak
109					→	5-11 lobes, bristle-tipped, leaf tapers from broad base.		Northern Red Oak
110					→	5-11 lobes, deep sinuses, lobes tapering, pointed, hairy 1½ - 2½ inch stems		Swamp Red Oak
111					→	7-9 lobes, some sinuses deep, some shallow; leaf tapers toward stem.		White Oak
112					Tapering	7-11 lobes, rounded, fine hairs on both surfaces, hairy ¼-½" stem. (Native Calif. only)		California White Oak
113						Much broader toward tip, toothed, scalloped, or lobed, sometimes sinuses extend halfway to midrib.		Swamp White Oak

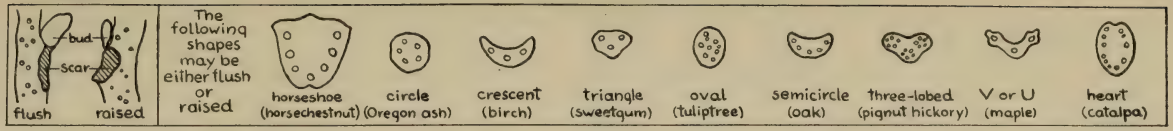
	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, OR TWIG CHARACTERISTICS	BARK	
114	ALTERNATE	SIMPLE	LOBED	Irregular	Tapering	Thin, sometimes lobed, sometimes entire		Laurel Oak
115					→	a) On lower branches: 3-lobed, bell shaped, shallow sinuses, broad lobes toothed b) On upper branches: 5- or 7-lobed, finger-like, curved, toothed, sometimes pointed		Southern Red Oak
116			ENTIRE	Oval	Round or Tapering	Paper-thin, wavy margins, not toothed		Cucumbertree
117						Tapering tip, unevenly scalloped, 10-16 pairs of straight primary veins		Chestnut Oak
118						Double toothed, margin curves under		Red Alder
119					Uneven round	Leathery		Persimmon
120					Round or indented	Double toothed; hairy 1/2 inch stems		American Hornbeam
121					Round or uneven indented	Sharply single toothed or inconspicuously double toothed.		Sweet Birch

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, OR TWIG CHARACTERISTICS	BARK	
122	ALTERNATE	SIMPLE	ENTIRE	Oval	Round	Pointed, gives off thick juice when squeezed		Osage-Orange
123						Edges turn under		Live Oak
124						Pointed, gives off balsam odor when crushed		Balsam Poplar
125						Fan out on 1½-3 inch stems, quiver at slightest breeze, stems flattened at right angle to plane of leaves.		Quaking Aspen
126						Blue-green below, thorny on young trees, few or no teeth on leaves of old trees.		Canyon Live Oak
127						Thorny toothed, thick, leathery		American Holly
128						Nearly white below, pale midrib, grooved ½ - 1 inch stem		Pacific Madrone

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, OR TWIG CHARACTERISTICS	BARK	
129	ALTERNATE	SIMPLE	ENTIRE	Oval	Tapering	Coarse, incurved teeth, glossy	Thin, smooth, blue-gray sometimes mottled	Beech
130						Bristle- or hair-tipped teeth, both surfaces smooth		American Chestnut
131						Usually smooth, sometimes irregularly lobed, thin		Laurel Oak
132						Coated below with rust-colored down		Southern Magnolia
133					Tapering or indented	Sharply double-toothed	Reddish brown scales	Yellow Birch
134					Indented	Thin, tough, sawtoothed	Small pieces peel away vertically	Eastern Hophornbeam
135					Round or tapering	Double toothed, tiny warty glands along main veins	Nearly black at base	Paper Birch
136					→	Spine at base of twig or leaf; sometimes lobed.		Hawthorn

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, AND TWIG CHARACTERISTICS	BARK	
137	ALTERNATE	SIMPLE	ENTIRE	Lopsided oval	Uneven round	Long point, 3 prominent veins branch out from base		Hackberry
138						Double toothed, stiffly haired, rough, wrinkled upper surface.		Slippery Elm
139						Single toothed.		American Elm
140				Oval or lance	Tapering	Aromatic, flavor like bitter almonds		Black Cherry
141				Lance	Tapering	Camphor odor when crushed (Native to California and Oregon)		California Laurel
142						Pale brownish below, many slender yellow veins		Shingle Oak
143						Unevenly double toothed, thin, tough, with flattened stem.		River Birch
144					Tapering or round	Many tiny teeth, thick, leathery, with rust areas below		Black Cottonwood
145				Lance or obovate	Tapering	Sawtoothed, teeth rounded, leaves crowd at end of twig.		Chinquapin Oak
146				Obovate	Tapering	Scalloped margin		Swamp Chestnut Oak
147						Toothed or scalloped or deeply lobed		Swamp White Oak
148						Sometimes scalloped; grooved, hairy 1½-2½" stem		Water Tupelo

	GROWTH	TYPE		SHAPE OF LEAF	SHAPE OF BASE	LEAF, STEM, OR TWIG CHARACTERISTICS	BARK	
149	ALTERNATE	SIMPLE	ENTIRE	Obovate	Tapering or round	Pointed, cluster thickly		Black Tupelo
150				Triangular	Straight or indented	Rounded teeth, leathery		Eastern Cottonwood
151					Round	Fan out on 1½-3 inch stems, quiver at slight breeze, stems flattened at right angles to plane of leaves		Quaking Aspen
152					→	Double-toothed; long pointed tip; flutter in slightest breeze		Gray Birch
153				Long narrow	→	Pointed both ends		Willow Oak
154				Oblong	Wedge	Scalloped, toothed; densely woolly below		Tanoak
155				Heart	Uneven indented	Coarsely toothed, 5-6 inches long		American Basswood
156				Fan	→	→		Ginkgo
157				Varied	→	3 shapes; lance, mitten (2-lobed), and 3-lobed, all aromatic		Sassafras



B. TWIG KEY (Winter for Deciduous)

	LEAF SCAR POSITION	LEAF SCAR SHAPE	TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
158	OPPOSITE, RAISED	Heart	→			Northern Catalpa
159	OPPOSITE, RAISED	Crescent	→			Cascara Buckthorn
160	OPPOSITE, RAISED	Circle	→			Royal Paulownia
161	OPPOSITE, FLUSH	Semicircle	→			White Ash
162	OPPOSITE, FLUSH	V- or U-shaped	Purplish or green, sometimes whitish bloom almost surrounded by scar.			Boxelder
163	OPPOSITE, FLUSH	V- or U-shaped	→	Green, gives off milky juice		Norway Maple
164	OPPOSITE, FLUSH	V- or U-shaped	→	Obtuse, 2-4 pairs of red scales		Red Maple
165	OPPOSITE, FLUSH	V- or U-shaped	→	Green		Sycamore Maple
166	OPPOSITE, FLUSH	V- or U-shaped	Unpleasant odor when crushed			Silver Maple

	LEAF SCAR		TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION	SHAPE				
167	OPPOSITE	Horseshoe	(Found only in Washington, Oregon, and California)	Stout, blunt, 3-4 pairs of green to reddish scales		Bigleaf Maple
168	FLUSH		→	Purplish tinge		Sugar Maple
169			→	Black sticky		Horsechestnut
170			Unpleasant odor	Scales keeled		Ohio Buckeye
171		Circle	Hairy			Oregon Ash
172		→	Dull red or purple with green areas			Pacific Dogwood
173		→	Yellow green to bright red, bitter	Flattened, pointed, downy, red		Flowering Dogwood

	LEAF SCAR			TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION		SHAPE				
174	ALTERNATE	RAISED	Semicircle	Downy pores			Shagbark Hickory
175			Semicircle or triangle	Bright red			Red Alder
176			Heart	Pale hairy tuft (eyebrow) above scar			Butternut
177				Light brown to orange-brown pores			Black Walnut
178		FLUSH	Round	Zig-zag, dark orange-brown	No terminals, scars surround laterals		Sycamore
179				→	1/4 inch egg shaped, laterals inconspicuous		Black Tupelo
180				→	No terminals, ¼ inch egg shaped brown laterals with 2 or 3 visible scales		American Chestnut
181				Reddish brown	Yellowish round, laterals inconspicuous		Water Tupelo
182			Round or oval	Bitter			Tuliptree (Yellow Poplar)

	LEAF SCAR			TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION		SHAPE				
183	ALTERNATE	FLUSH	Oval, ovate or ellipse	Downy pores			Pecan
184				→	6-7 visible red-brown overlapping scales, laterals incurving		Quaking Aspen
185				Shiny pores	5 overlapping scales sealed by amber fragrant resin		Balsam Poplar
186				Yellowish brown	¾ inch elliptical to conical 6-7 shiny brown resinous overlapping scales.		Eastern Cottonwood
187				Angular, light yellow-brown or greenish brown or orange-brown pores.	¾ inch egg-shaped to conical 6-7 resinous overlapping scales, fragrant when crushed.		Black Cottonwood
188				Pairs of short thorns			Black Locust
189			Oval to crescent	→	Silvery, silky		Cucumbertree
190				Zig-zag, shiny	No terminals	Light brown to silver gray	Hackberry
191				→	No terminals, laterals sticky		American Basswood
192			Crescent to triangle	Corky ridges, carries seedballs			Sweetgum

	LEAF SCAR		TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION	SHAPE				
193	ALTERNATE FLUSH		→	No terminals, 2 scales on laterals		Persimmon
194			→	heavy branched thorn		Honeylocust
195		Crescent to semi-circle	Wintergreen flavor			Yellow Birch
196			Wintergreen flavor, spurs on old growth			Sweet Birch
197			Warty glandular pores			Gray Birch
198			Spurs on old growth			Paper Birch
199			Downy			River Birch
200		Semicircle	Rough, ashy, gray to brownish gray		Inner bark slippery, pleasant taste	Slippery Elm
201			Zig-zag		Dark gray	American Elm
202			Short spurs, bitter almond taste			Black Cherry
203			Corky ridges			Bur Oak
204			Tawny, hairy			Post Oak
205			(Found only in California)		Rough cubes	Calif. White Oak
206			Gray			Overcup Oak
207			Dark Red			Southern Red Oak
208			Dark red shiny, bare March and April			Laurel Oak
209			Orange-brown		Light gray with thin loose silvery flakes	Chinquapin Oak

	LEAF SCAR			TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION		SHAPE				
210	ALTERNATE	FLUSH	SEMICIRCLE	Orange-red (found only on West Coast)	Rusty brown with matted hair		Oregon White Oak
211				Straw brown, peeling bark			Swamp White Oak
212				Reddish brown, shiny			Pin Oak
213				Reddish brown	Yellowish gray, 5-sided, downy		Black Oak
214				Reddish brown	4-angled, light brown scales		Swamp Red Oak
215				Reddish brown	Sometimes angled, dark red-brown scales.		Scarlet Oak
216				Reddish brown to red	Sharp pointed, 1/8", chestnut brown scales pale in margins		Willow Oak
217				Reddish brown to greenish brown	Pointed oval, ¼", pale hairs circular in cross-section		Northern Red Oak
218				Reddish brown or orange first winter, dark gray or brown later		Nearly black	Chestnut Oak
219				Reddish brown or orange first winter, ashy gray later		Grayish brown tinged with red	Swamp Chestnut Oak
220				Light reddish brown first winter, dark brown later		Scales light brown tinged with red	Shingle Oak
221				Purplish gray to greenish red			White Oak

	LEAF SCAR			TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION		SHAPE				
222	ALTERNATE	FLUSH	Heart	Prominent orange pores			Shellbark Hickory
223				Orange pith	Minute, hidden in leaf scars or bark		Kentucky Coffeetree
224			Heart or 3-lobed	→	Globe-like	Flaky	Mockernut Hickory
225				→	Globe-like	Rounded ridges	Pignut Hickory
226				→	Cylindrical or 4-angled		Bitternut Hickory
227			→	Pale oblong pores, spines at base			Hawthorn
228			→	Aromatic			Sassafras
229			→	Short stout spines entire length			Osage-Orange
230			→	Short downy, scars nearly surround twig.	Short hairy, almost surrounded by scar.		American Yellowwood
231			→	Sometimes slightly zig-zag	¾ inch lance-shaped, long point.	Light blue-gray sometimes mottled	Beech
232			→	→	No terminals, laterals 5-1/8 inch, oval or oblong	Blue-gray	American Hornbeam
233			→	→	No terminals, laterals ¼", slightly hairy	Gray-brown	Eastern Hophornbeam

	LEAF SCAR		TWIG CHARACTERISTICS	BUD CHARACTERISTICS	BARK	
	POSITION	SHAPE				
234	SPIRAL OR SPURS	→	Spiral or spurs	Conical, short pointed bright brown scales.		Ginkgo
235		→	Spiral	Globe-like, sharp pointed scales	Fluted	Baldcypress
236		→	Carry nearly spherical cones, spurs			Tamarack
237		→	Orange-brown, smooth spurs			Western Larch

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